

# Natural Hazards Observer

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## The National Earthquake Loss Reduction Program

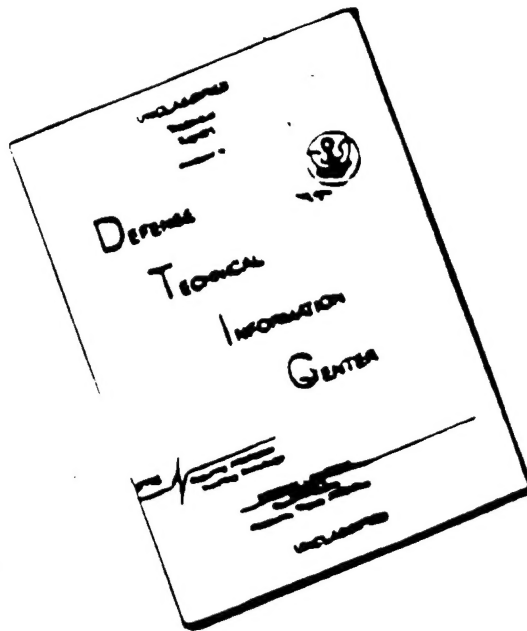
—an invited comment

The July 1996 issue of the *Natural Hazards Observer* (p. 10) noted the formal announcement of the new National Earthquake Loss Reduction Program (NEP). This new program builds upon—but does not supplant—the National Earthquake Hazards Reduction Program (NEHRP), which is legislated by Congress.

Since the formal announcement, several significant events have transpired. The Federal Emergency Management Agency (FEMA), which has “lead agency” responsibility for the NEHRP and the NEP, has created a National Earthquake Program Office as part of its Mitigation Directorate. The NEP office director reports directly to the associate director for mitigation.

In June, the NEP agencies held a two-day retreat at the National Institute of Standards and Technology in Gaithersburg, Maryland, to begin strategic planning. This effort builds on the Office of Science and Technology Policy report that recommended establishment of the NEP, as well as other reviews of the NEHRP in the past several years. The group drafted goals for the NEP and two sets of objectives; one for the NEP office and one for the NEP as a whole. The agencies reconvened in early October to consider the results of these efforts. Soon, the proposed goals and objectives will be shared for comment by the many nonfederal groups interested in earthquake hazards reduction.

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In the meantime, the NEP office staff have begun site visits to the participating agencies to understand better the nature, scope, and organization of their earthquake hazard reduction programs.

Some things are clear, even at this early stage. First, the NEP will provide a useful umbrella and thus a better picture of federal activities in earthquake hazards reduction. In so doing, it will help foster efforts that are mutually supportive.

Second, at the risk of stating the obvious, earthquake hazards reduction activities are in fierce competition for declining federal dollars. This reality will require, among other steps, a top-to-bottom assessment of the roles and responsibilities of all the organizations—public and private—that are active in earthquake hazards reduction to determine where and how activities might be performed more effectively to maximize the impact of dwindling resources.

Third, the “implementation gap”—the difference between what we know about reducing the impacts of earthquakes and what we are putting into practice—remains an intractable barrier, touching as it does the cherished prerogatives of many interests in our multi-layered society. In this arena, the federal government can inform the debate, but its role in determining the outcome is very much at issue.

Fourth, we need to be more disciplined in establishing the costs and benefits of earthquake hazard reduction. While trailblazing work is underway, at this time we do not agree about the costs of an earthquake—or any natural hazard event, for that matter. Absent such a guideline, it is difficult at best to make consistent comparisons across time and events that might justify the mitigation measures we espouse.

Finally, we need to consider that earthquake hazards reduction is an essential component of an “all-hazards” approach to mitigation. The recently published *National Mitigation Strategy* (see p. 6 of this *Observer*) recognizes the synergies that exist among hazard-specific mitigation efforts and strongly suggests that others need to be developed.

The sobering loss of life in the Kobe earthquake and the staggering financial costs of both the Kobe and Northridge quakes have renewed interest among both the public and private sectors in short- and long-term strategies to reduce the human and financial costs of such events. The development and distribution of earthquake loss-estimation models promises to be of significant assistance in presenting, graphically and credibly, the consequences of these events and the impact of alternative mitigation techniques. At the same time, the private sector is developing new tools and market mechanisms to spread the risks associated with low-probability, high-impact events. Concerned businesses are organizing themselves, their employees, and their communities to deal with seismic events or other major disasters. Congress continues to explore the feasibility and form of a national all-hazards insurance program, while states,

such as California, wrestle with the problem of providing earthquake insurance for their citizens (see p. 4 of this *Observer*). The American Red Cross is establishing a mitigation task force to underscore the increased interest of this organization in finding ways to reduce suffering and loss (see the *Observer*, Vol. XXI, No. 1, p. 8).

These are all examples of efforts to establish systems and programs to help society deal with catastrophe. The continuing challenge is to institutionalize these processes at the local level where mitigation ultimately impacts our daily lives. The National Earthquake Loss Reduction Program has the potential to make a major contribution to this process.

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Director

National Earthquake Loss Reduction Program

For more information, contact the *National Earthquake Loss Reduction Program*, FEMA, 500 C Street, S.W., Washington, DC 20472; (202) 646-3002; fax: (202) 646-2577.

### UNCRD's HI-Net and the IDNDR

Recognizing that disaster prevention officials and researchers must cooperate and share their experiences to effectively decrease disaster damage and losses, in 1995 the United Nations Centre for Regional Development (UNCRD) in Nagoya, Japan, created the United Nations Human Information Network for Disaster Management in Asia and the Pacific (or, simply, “UN Hi-Net”). This data base—a UNCRD contribution to the United Nations International Decade for Natural Disaster Reduction—presently includes more than 1,100 registered members centered around Asia.

The organizers have recently published a membership directory and the first issue of a UN Hi-Net newsletter, *CONNECTIONs*, that describes recent or ongoing research and activities around the Pacific to reduce disaster impacts.

To obtain copies of these publications or more information about UN Hi-Net, contact the *United Nations Human Information Database (UN Hi-Net)*, Disaster Management Group, United Nations Centre for Regional Development, Nagoya 1-47-1, Nakamura-ku, Nagoya 450, Japan; tel: (+81-52) 561-93-77; fax: (+81-52) 561-93-75; e-mail: [unhinet@uncrd.or.jp](mailto:unhinet@uncrd.or.jp); WWW: <http://www.uncrd.or.jp/>.

# HAZARDS ASSESSMENT UPDATE

With the help of dozens of experts, the Natural Hazards Research and Applications Information Center is currently undertaking an assessment of knowledge and research needs regarding natural hazards in the United States (see the *Observer*, Vol. XX, No. 2, p. 6). This column has been instituted to inform readers of the *Observer* of the efforts of the many contributors to the project.

## Contextual Factors that Influence Losses

Hazards vulnerability is not evenly distributed across the communities and societies of the world, in part because losses from disasters are affected by a diverse collection of contextual factors. These factors include, among others, the size and nature of the affected population, the condition of the economy, the values of the culture, the political system, and various aspects of social differentiation. The term "contextual" refers to inter-related conditions within which hazard vulnerabilities exist and disasters occur.

While selected dimensions of the individual contextual factors have been found to influence disaster losses, it is most likely the interrelationships of these factors that hold the key to understanding how losses occur. However, rather than studying effects resulting from the structure of interrelationships or the contextual profiles of these factors, hazard researchers have mostly studied selected attributes at the individual and household levels. To expand the equation that determines losses from disasters, it is imperative that we understand the dynamic interrelationships among the contextual factors, which, taken together, define the character of our communities.

Contextual factors intervene or moderate the relationships between mitigation and loss, between preparedness and loss—indeed, between *any* of the cyclical stages used by disaster researchers and loss. For example, communities with public officials committed to manage the development of hazard-prone areas experience fewer losses in the long run than those who refuse or avoid such planning. The scattered bits of evidence gathered to date suggest the importance of each contextual factor. However, since the contextual factors are interrelated, we believe that they operate as a dynamic constellation. Birth rates, death rates, and, increasingly, mobility determine population density. Whether people stay in a settlement or move to a new one is a function of social and economic opportunities. These opportunities are driven by cultural values that are conditioned through ongoing experiences, with occasional random or creative innovations. Our society's ability to mitigate losses from disaster will be enhanced with systematic and periodic information about the dynamic interrelationships among contextual factors that intervene and moderate the losses suffered in disaster.

The Contextual Factors Subgroup of the Second Assessment is summarizing what is known about how certain contextual factors influence losses due to disaster. The subgroup is multidisciplinary, with members representing demography, economics, philosophy, political science, social work, and sociology. The influences of particular contextual factors are being assessed by the individual members who represent the discipline most directly associated with that factor. An overall summary



will be derived from these independent assessments, and recommendations will be made to fill the gaps in our knowledge regarding the influence of contextual factors on hazard vulnerability.

The underlying mechanism that shapes the constellation of contextual factors will be understood only by observing changes in the overall interwoven pattern. This is a significant constraint since the separate contextual factors are associated with different disciplines and typically studied independently. The Contextual Factors Subgroup is considering ways to work around this constraint. *Observer* readers with ideas or suggestions about this process should contact David Gillespie, Washington University, School of Social Work, One Brookings Drive, Box 1196, St. Louis, MO 63130. (314) 935-6674; fax (314) 935-8511; e-mail: davidg@gwbssw.wustl.edu or davidfg@fidnet.com.



# California Creates State Earthquake Insurance Program

Following years of public debate, legislator wrangling, and a shortage of earthquake insurance, on September 27, 1996, California Governor Pete Wilson signed into law S.B. 1993 (Chapter 967, Statutes of 1996), legislation establishing a state-supported program to provide quake coverage to homeowners. In the past two years, many insurance companies have refused to sell new homeowner policies, primarily because companies paid out claims totaling twice the amount of quake premiums collected in the state's entire history following the 1994 Northridge earthquake. As a result, many homeowners saw a doubling or even quadrupling of their premium rates, while new home buyers found it difficult, if not impossible, to obtain any homeowner insurance at all.

## California Earthquake Authority

S.B. 1993, a companion bill to legislation passed in 1995 that conditionally approved formation of the California Earthquake Authority (CEA), authorizes the state insurance commissioner to establish this privately financed, publicly managed state agency to provide earthquake coverage to renters and owners of residential property. The CEA is expected to begin operation by December 1, 1996.

Under the new law, companies that collectively hold at least 70% of residential quake insurance in the state must agree to participate in the CEA before it can become operational. Most observers expect this requirement to be met because the state's three largest insurance providers—State Farm, Allstate, and Farmers—hold 53% and are already committed to the CEA. Besides funds provided by participating insurers and insurance premiums, funds from reinsurance, debt authority by the state of California, and capital from private investors will also finance the program. Insurers will provide the first \$1 billion in cash and commit an additional \$3 billion to pay claims, if needed.

Policyholders will still obtain their policies from their own insurance companies, but the policies will be transferred to the control of the CEA, which will pay any claims. If benefits paid by the CEA following an earthquake exhaust the authority's available capital, the state treasurer will issue revenue bonds or obtain other debt financing secured by the state of California for up to \$1 billion. This debt will be repaid through assessments of up to 20% on

existing premiums. In addition, the CEA will be able to assess participating insurance companies up to \$2 billion in order to pay claims. If 100% of state insurers participate in the program, the state estimates that as much as \$10.5 billion will be available to the CEA in its first year of operation.

## Homeowner Mitigation

The initial CEA legislation passed in 1995 requires that, "if deemed actuarially sound," 5% of all revenues be set aside each year for an Earthquake Loss Mitigation Fund, which may be used to supply grants, loans, or loan guarantees to dwelling owners who wish to retrofit their homes to reduce potential earthquake damage. In return, these owners receive a premium discount of 5% or more.

## Premiums, Deductibles, and Exclusions

The California Department of Insurance estimates that, with the establishment of the CEA, the average earthquake policy will cost \$3.29 per \$1,000 coverage, with deductibles equal to 15% of the value of the home. Prior to the Northridge quake, deductibles were often 5% to 10%. Thus, under CEA, the owner of a \$200,000 home would pay between \$660 and \$1,050 in annual premiums, depending on the location and degree of risk of the home. Consequently, for many homeowners, the new price of insurance will be about twice that offered by private insurers before the Northridge earthquake, and coverage will be far more restrictive, because garages, fences, landscaping, and swimming pools will no longer be insured. However, fires caused by earthquakes will continue to be covered by private insurers under regular homeowner policies. Indeed, the CEA earthquake policies will only be available to those who also have general residential property insurance.



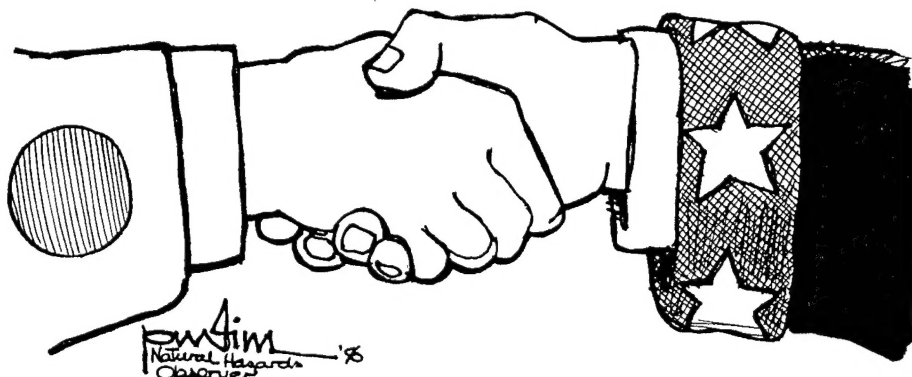
## Operational Guidelines

The California Department of Insurance estimates that, in its first year of operation, the CEA will have enough resources to handle claims resulting from a quake twice as destructive as the Northridge event. Nevertheless, under the new law, if damage from a future earthquake exceeds CEA resources, payments will be prorated.

The CEA will be managed by a governing board consisting of the governor, the state treasurer, and the state insurance commissioner. The board will be advised by a 10-member panel consisting of four members representing insurance companies licensed to provide fire insurance in the state, two licensed insurance agents, one seismologist, one person expert in construction requirements and building codes, and two members of the public not connected with the insurance industry.

As its first task, the board must draw up a plan of operation that establishes the policies and procedures of the CEA, including, but not limited to, financial operations, claims procedures, methods of premium collection, and methods for dispute resolution. This plan must be approved by both the state insurance commissioner and the state legislature. In addition, the board is required to submit an annual report on CEA operations, including detailed financial information, to both the insurance commissioner and the state legislature.

For more information on the California Earthquake Authority, contact the *State of California, Department of Insurance, 320 Capital Mall, Sacramento, CA 95814; (916) 322-3555; e-mail: [wwwadmin@insurance.ca.gov](mailto:wwwadmin@insurance.ca.gov); World Wide Web: <http://www.insurance.ca.gov/prs/ceaqa.html>.*



## U.S. and Japan Issue Joint Statement on Earthquake Policy

Since 1989, the U.S. and Japan have experienced serious damage and loss of life due to the Kobe, Loma Prieta, and Northridge earthquakes. In September, the First U.S.-Japan Earthquake Policy Symposium was held to develop a common agenda for the two countries in dealing with earthquake hazards. This meeting was the result of the Natural Disaster Reduction Initiative added to the U.S.-Japan Common Agenda for Cooperation in the Global Perspective by President Clinton and Prime Minister Hashimoto in April 1996.

The symposium brought together 25 senior government officials from each country to discuss methods for exchanging knowledge about earthquakes. The effort is being chaired by the U.S. Federal Emergency Management Agency (FEMA) and the National Land Agency (NLA) of Japan.

The symposium participants discussed improving government policies and programs and private-sector activities; performing joint investigations and exchanging policy and technical personnel following a quake; cultivating scientific knowledge and engineering technologies; developing and exchanging information on earth-

quake forecasting, urban planning, and development policies; strengthening of structures and lifelines; hazard mapping and vulnerability assessment; warning; emergency response; disaster assessment; search and rescue; firefighting; recovery; mitigation; improving emergency communication systems; and distributing timely and accurate information to disaster victims.

The participants agreed to hold a second symposium in January 1997 in Japan, to establish a "U.S.-Japan High Level Forum for Earthquake Emergency Management Policy Cooperation" and to form a working group to promote and encourage implementation of the recommendations of this symposium. In addition, the two countries agreed to make information and data about cooperative activities available to the public and to continue to contribute to the International Decade for Natural Disaster Reduction (IDNDR).

For more information on this effort, contact *Walter Hays, U.S. Geological Survey, 955 National Center, Reston, VA 22092; (703) 648-6711; fax: (703) 648-6747; e-mail: [whays@usgs.gov](mailto:whays@usgs.gov).*



## The Internet Page(s)



### Cosmic Catastrophes, Earthquake Information, Flood Facts, Tornado Topics, and other Hazard Highlights . . . All on the Web

These are some of the more interesting sites we've stumbled across recently on the World Wide Web. A complete, annotated list of hazard/disaster Web venues is posted on the Hazard Center's World Wide Web page:

<http://adder.colorado.edu/~hazctr/sites.html>

<http://adder.colorado.edu/~hazctr/Home.html>

In the last *Observer* (Vol. XXI, No. 1, p. 3) we listed all the session summaries from the 1996 Hazards Research and Applications Workshop held in Denver, Colorado, in July and indicated that they were available for purchase. Well, if you have access to the World Wide Web, the full texts of those summaries are now available on-line at no cost. Just take a look at the "Session Summaries" page on the Hazards Center Web site listed above.

<http://www.fema.gov/mit/ntmstrat.htm>

After his appointment as director of the Federal Emergency Management Agency (FEMA), James Lee Witt announced that mitigation would become a cornerstone of FEMA's efforts to manage hazards in the U.S. The agency subsequently launched a series of regional forums to solicit suggestions regarding what should constitute a national mitigation plan, and the agency used that information to create the document entitled *National Mitigation Strategy: Partnerships for Building Safer Communities*—a conceptual framework for actions to reduce loss of life and property due to natural hazards and to promote the long-term economic, environmental, and cultural well-being of U.S. communities. *National Mitigation Strategy* is now available on the World Wide Web at the address above. Hard copies are also available from FEMA, P.O. Box 2012, Jessup, MD 20794-2012; 1-800-480-2520, or (202) 646-3484; fax: (301) 497-6378.

[http://www.housenet.com/articles/Saf\\_Sec/STORM.HTM](http://www.housenet.com/articles/Saf_Sec/STORM.HTM)

Housenet's "Flood/Hurricane Help" page covers virtually everything a person needs to know when returning to and repairing a home damaged by a flood. The 31 articles in this section of the Housenet site cover everything from drying a home, to restoring utilities, to cleaning up and making repairs. There's also information covering wind and water damage mitigation and family evacuation.

<http://ccf.arc.nasa.gov/sst/>

NASA's Ames Research Center maintains this colorful Web site containing information on the comet/asteroid impact hazard. The page contains the texts of several reports on this hazard, congressional testimony and statements, a position paper by the American Institute of Aeronautics and Astronautics, a list of all known threatening Near Earth Objects (NEOs), a bibliography on the topic, and the report of the NEO Survey Working Group. There are nifty images and animations, as well as hot links to other Web sites dealing with asteroids, comets, the Tunguska event, the Spaceguard Foundation, and related topics.

<http://www.comet.net/earthquake>

Comet is an Internet service provider in Charlottesville, Virginia. From that unlikely location, the company provides this "Earthquake Resource Center" page—a very good starting point for anyone looking for earthquake information of any sort. It includes copious links arranged under the following subtopics: Good Sites for Learning about Earthquakes; Eyewitness Accounts of Earthquakes; Earthquake Pictures; Slides, Films, Maps, and other Materials; Movers and Shakers (researchers and writers); Latest Tremor Reports; News about Recent Large Quakes; The Kobe Earthquake; Other

#### FEMA Seeks Mitigation Information for Agency Web Site

The Federal Emergency Management Agency (FEMA) recently remodeled its Web site, and one of its new additions is an expanded section on mitigation and risk reduction. A special working group is developing material for that section, and they are currently interested in obtaining both feedback about the material already posted and ideas about what additional information people would like to receive. The direct URL for this FEMA page is:

<http://www.fema.gov/mit>

Any ideas should be forwarded to the FEMA Office of Emergency Information and Public Affairs, e-mail: [eipa@fema.gov](mailto:eipa@fema.gov).

Significant Earthquakes; Earthquake Research Centers and Projects; Academic Sites and Seismology Departments; Disaster Preparedness and Relief; and Related Topics.

<http://www.tornadoproject.com/>

The Tornado Project—the folks up in Vermont who, among other things, compiled *Significant Tornadoes: 1880-1989*, the definitive chronology of U.S. tornadoes—has now established a Web site containing a store of tornado information. The site includes pages entitled: Recent Tornadoes; Tornadoes in the Past; Top Tens about Tornadoes; Tornado Safety; Myths about Tornadoes; The Fujita Scale of Tornado Intensity; The Tornado Project; Tornado Stories; Tornado Videos, Books, and Posters; Other Disasters; Storm Chasing; Other Neat Stuff about Tornadoes; Favorite Sites; FAQs about Tornadoes; and Tornado Oddities. For more information about the many publications, videos, and other products available from this group, contact *The Tornado Project*, P.O. Box 302, St. Johnsbury, VT 05819; e-mail: [tornproj@plainfield.bypass.com](mailto:tornproj@plainfield.bypass.com).

<http://www.csac.org>

The "Cyberspace Snow and Avalanche Center" covers current snow conditions, avalanche education and research (including bibliographies and other publications), archived avalanche bulletins, summaries of avalanche incidents, professional resources (including lists of research centers, weather resources, conferences, and additional avalanche Web sites), and other snow and avalanche information such as statistics and personal accounts of disasters.

<http://www.clarknet.com/erd>

This new Emergency Resource Directory was created to provide easy access to emergency Web sites around the world. The authors intend it to become the most comprehensive guide to emergency-related sites on the Internet. As of October 1, the directory incorporated more than 300 reference pages and contained thousands of emergency-related links. The sites are indexed by country, and the page includes a search engine to aid users in finding the information they need.

<http://www.volcano.si.edu/gvp/>

The Smithsonian Institution's Global Volcanism Program (GVP) is dedicated to better understanding of all volcanoes through documentation of eruptions, large and small, during the past 10,000 years. The program integrates observations of contemporary activity with historical and geological records in order to aid wise preparation for the future. This Web site includes a data base of volcanoes of the world, an on-line version of the program's *Bulletin of the Global Volcanism Network*—reports of ongoing eruptions from local observers around the world, a catalog of other GVP products, information about the program staff, and a well-organized set of links to other volcano Web sites.

<http://www.usatoday.com/weather/windex.htm>

We've previously mentioned the wealth of information posted on the Web by the national newspaper *USA Today*. The index cited above can help you navigate through much of it. Although this section ostensibly covers weather, it also includes citations for such hazards as earthquakes, volcanoes, and floods.

<http://www.epa.gov/swercepp/>

If you're concerned about chemical emergencies, start here—the home page of EPA's Chemical Emergency Preparedness and Prevention Office (CEPPO). There's not only a lot of information available, but also *myriad* dendritic connections to other sites with chemical emergency information.

### Now Through the Net: *UN/DHA Humanitarian News*

Via the cybergrapevine we recently received issue #1 of the United Nations Department of Humanitarian Affairs (UN/DHA) publication, *Humanitarian News*. (DHA notes that a published fax version of this document is also available.) The premier issue contains articles on recent or current emergency situations around the world, including calls for relief and aid, a natural disaster update section, and other brief articles and conference announcements. For more information about *UN/DHA Humanitarian News*, contact the *United Nations Department of Humanitarian Affairs*, CH-1211 Geneva 10, Switzerland; tel: (41-22) 917-28-56; fax: (41-22) 917-00-23; e-mail: [dhagva@unicc.org](mailto:dhagva@unicc.org).





## Decade for Natural Disaster Reduction

# Making Cities Safer

## The Asian Urban Disaster Mitigation Program (AUDMP)

### Hazard Vulnerability in Asia

Asia is widely recognized as the most disaster-prone area of the world. The Asia-Pacific region covers only 26% of the world's land area, yet claims nearly half of all major natural disasters.<sup>1</sup> The region is subject to a wide array of natural hazards, including flooding, earthquakes, landslides, severe storms, as well as the technological hazards, such as chemical spills and hazardous waste contamination, that have accompanied industrialization. The result has been a devastating pattern of lost life, livelihood, and economic investment. For countries striving to develop economically, the price tag is staggering: the total damage resulting from natural disasters in the Asia-Pacific region for 1995 alone has been estimated at \$120 billion (U.S.).<sup>2</sup>

Although hazard mitigation is clearly needed, disaster management in the region to date has tended to be more reactive than proactive. Asia has relatively strong response and relief capabilities, but has done little to prevent and mitigate disasters. Also, while hazard research has been conducted in the scientific and technical communities, the resulting technical information has rarely been communicated to decision makers, nor have general recommendations been turned into concrete strategies or actions.

### Cities as Problems and Opportunities

Understanding vulnerability and mitigation as well as patterns of physical development in the region's cities is key to reducing disasters in this part of the world.

From one perspective, cities represent growing disaster vulnerability. To begin with, the large-scale migration of rural people to the cities for economic opportunity has led to the rapid, often uncontrolled growth of urban areas. By the year 2020, over half of Asia's people will live in cities.<sup>3</sup> As pressure for habitable urban land increases, people are typically forced to settle on marginal, disaster-prone lands, such as on unstable slopes, along the water's edge, or near technological hazards. In addition, rapid development has also resulted in poor construction of buildings and infrastructure, both in the formal and informal sectors. Overall,

poorly managed development and related environmental degradation in urban areas leaves houses, schools, businesses, and the people in them at greater risk of disaster.

At the same time, cities also represent a critical opportunity to build a safer physical environment. First, cities are the nexus of economic growth in the region. The wealth generated by urban areas provides the financial incentives and means to address hazard vulnerability. Second, urbanizing areas provide a unique opportunity to assess and mitigate hazards during the physical development process. If disaster mitigation can be effectively incorporated into the management of urban areas, there is a chance not only to reduce hazard vulnerability, but in fact to make cities safe, protective places to live and work.

### Making Cities Safer

To meet the challenge of urban hazard mitigation in Asia, the Asian Disaster Preparedness Center (ADPC), a leading regional center for disaster management, recently launched the Asian Urban Disaster Mitigation Program (AUDMP). This four-year program strives to reduce the disaster vulnerability of urban populations, infrastructure, lifeline facilities, and shelter in targeted cities in Asia.<sup>4</sup> The purpose of the program is twofold: 1) to establish sustainable public and private sector mechanisms for disaster mitigation that will measurably lessen loss of life, reduce the amount of physical and economic damage, and shorten post-disaster recovery time; and 2) to promote replication and adaptation of successful mitigation measures within target countries and throughout the region.

Working in conjunction with collaborating institutions in each target country, the program uses a three-tiered strategy:

- 1) **National demonstration projects** in each of the target countries will provide working examples of urban hazard mitigation.
- 2) The **information dissemination and networking** component will help build public and private networks to exchange information and experience



regarding urban disaster management; again, the goal is to encourage replication of successful mitigation practices.

- 3) **Policy seminars and training** will introduce hazard mitigation practices to national-level decision makers, as well as institutionalize disaster management curricula within target countries.



Initially, the AUDMP is structured around demonstration activities in five target countries:

- **India**—The objective of the India project is to reduce the vulnerability to technological/industrial hazards of the population within the Calcutta and Baroda metropolitan areas.
- **Indonesia**—In Indonesia, the objective is to reduce the natural disaster vulnerability of the urban population, infrastructure, critical facilities, and shelter in the city of Bandung, West Java. The project will emphasize earthquake hazards, and special attention will be paid to critical facilities, such as schools and hospitals, which typically suffer from poor construction and consequent heavy losses due to earthquakes.
- **Laos**—The objective of the Laos project is to reduce vulnerability to urban fire emergencies of the population and built environment of Vientiane.
- **The Philippines**—The objective of the Philippines project is to reduce vulnerability to natural hazards in two cities, beginning with mitigation of floods in Naga City, followed by volcano hazard mitigation in San Carlos.
- **Sri Lanka**—The Sri Lanka project will assist municipal officials in improving tools and skills for development planning and risk management in Ratnapura, a growing town in Uva Province. Ratnapura is subject to landslides and flooding, in addition to erosion, pollution, and contamination of water supplies.

Bangladesh, Cambodia, Mongolia, Nepal, and Central Asia are all being considered as sites for future projects.

The AUDMP is still in the initial stages of implementation. Currently, national demonstration project designs are complete for Indonesia and the Philippines, and ADPC is negotiating cooperative agreements with collaborating institutions in those countries. Project designs are underway for India, Sri Lanka, and Laos. Additionally, initial discussions have taken place to include an earthquake hazard mitigation activity in Nepal's Katmandu valley in the AUDMP. The overall information and networking plan as well as the training strategy are also being finalized.

### Conclusions

Urban issues are at the forefront in disaster management worldwide, as evidenced by the United Nation's International Decade for Natural Disaster Reduction (IDNDR) Secretariat's selection of "Cities at Risk" as this year's theme. In Asia, protecting cities and growth centers from hazards is especially important to ensuring stable, sustainable economic and human growth. By focusing on mitigation and urban areas through the AUDMP, ADPC hopes to help make Asian cities what they can be: safe places to live, work, and invest.

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For additional information about the AUDMP, contact the *Asian Disaster Preparedness Center, Asian Institute of Technology, P.O. Box 2754, Bangkok 1051, Thailand*; tel: David Hollister, (66 2) 524-5381, or Erika Lund, (66 2) 524-5364; fax: (66-2) 524-5360; e-mail: [audmp@ait.ac.th](mailto:audmp@ait.ac.th).

1. *Natural Hazards and Natural Disaster Reduction in Asia and the Pacific*. New York: United Nations Economic and Social Commission for Asia and the Pacific, preface. 1995.

2. *Natural Hazards and Natural Disaster Reduction in Asia and the Pacific*. New York: United Nations Economic and Social Commission for Asia and the Pacific, p. 1. 1995.

3. *World Population Prospects*. New York: United Nations, p. 304. 1993.

4. Core funding for the AUDMP comes from USAID's Office of Foreign Disasters Assistance (OFDA). Additional funds will come from the Asian Disaster Preparedness Center (ADPC), collaborating institutions, and other development agencies.

## WASHINGTON UPDATE

### Agencies Issue Final Rule on Loans in Special Flood Hazard Areas

In a recent issue of the *Federal Register*, five federal agencies published a joint final rule that strengthens flood insurance lending requirements in the U.S. They revised their guidelines in order to meet the requirements of the National Flood Insurance Reform Act of 1994 (see the *Observer*, Vol. XIX, No. 2, p.8). As of October 1, 1996, banks are required to routinely escrow flood insurance premiums for properties located in floodplains.

The final rule establishes new escrow requirements for flood insurance premiums, outlines the statutory requirements for lenders to "force place" flood insurance on behalf of borrowers in certain circumstances, enhances flood hazard notice requirements, and sets forth new authority for lenders to charge fees for determining whether a property is located in a special flood hazard area. A special flood hazard area (SFHA) is an area within a floodplain that has a 1% or greater chance of flooding in any given year. SFHAs are delineated on maps issued by the Federal Emergency Management Agency (FEMA) for individual communities, who establish their eligibility to participate in the National Flood Insurance Program (NFIP) by adopting and enforcing floodplain management measures.

The rule was issued by the Department of the Treasury, Office of the Comptroller of the Currency and the Office of Thrift Supervision; the Federal Reserve System; the Federal Deposit Insurance Corporation; and the Farm Credit Administration.



The rule, contained in the August 20 issue of the *Federal Register*, states:

In general, a bank shall not make, increase, extend, or renew any designated loan unless the building or mobile home and any personal property securing the loan is covered by flood insurance for the term of the loan. The amount of insurance must be at least equal to the lesser of the outstanding principal balance of the designated loan or the maximum limit of coverage available for the particular type of property under the Act. Flood insurance coverage under the Act is limited to the overall value of the property securing the designated loan minus the value of the land on which the property is located.

The rule requires banks to escrow all premiums and fees for required flood insurance. If a loan provider determines at any time during the loan that the property is not insured for flood damage, the bank must notify the borrower. If the borrower fails to obtain flood insurance within 45 days, the bank may purchase flood insurance on the borrower's behalf and charge for the cost of premiums and fees incurred.

Copies of the joint final rule appeared in Volume 61, No. 169 of the *Federal Register* (pp. 45683-45716), which is available at any *Federal Depository Library* or via the World Wide Web: <http://www.access.gpo.gov>.

### Feds Fine Tune Wildland Fire Policy

The challenge of managing wildland fire in the U.S. is increasing in complexity and magnitude. Because forest vegetation patterns have been altered by past land-use practices and a century of fire suppression, the threat of catastrophic fires is growing and potentially permanent ecological deterioration is possible where fuel loads exceed historical conditions.

Concerned with this growing threat, the U.S. Department of the Interior and the U.S. Department of Agriculture undertook the Federal Wildland Fire Management Policy and Program Review to ensure that federal policies are uniform and programs are cooperative and cohesive. Two recent reports outline this effort.

*Federal Wildland Fire Policy* (1995, 44 pp., free) addresses five major topic areas, presents nine guiding principles that are fundamental to wildland fire management, and recommends a set of 13 federal policies. Among the key points of the report:

- Protection of human life must be the first priority in wildland fire management, with property and natural/cultural resources second.
- Wildland fire, as a critical natural process, must be reintroduced into the ecosystem.
- Federal agencies must create an organizational climate that supports employees who implement a properly planned program to reintroduce wildland fire.

The report also includes discussions of the role of wildland fire in resource management, safety and planning, wildland/urban interface protection, and coordinated program management.

**Federal Wildland Fire Management Policy and Program Review Implementation Action Plan Report** (1996, 36 pp., free) describes methods for implementing the recommendations contained in the first report. It outlines specific actions to be enacted immediately, such as developing fire management plans for all areas subject to wildland fires, developing research programs, and requiring appropriate treatment of fuel hazards created by resource management and land-use activities.

The **Action Plan Report** also discusses items that require a long-term commitment, such as the use of a planning system that recognizes both fire use and fire protection as inherent parts of natural resource management, long-range management objectives, and standard criteria to assess suppression and support requirements. Finally, items that are being evaluated by an interagency management review team include establishing fire management qualifications, developing appropriate training and fire management tools, and establishing job performance standards for agency administrators and fire managers that clearly reflect the complexity and scope of fire management responsibilities.

Copies of the reports may be obtained from the *Office of External Affairs, National Interagency Fire Center, 3833 South Development Avenue, Boise, ID 83705-5354; (208) 387-5150 or 387-5457*. The complete text of both reports is also available via the World Wide Web at <http://www.fs.fed.us/land/#fire>.

## FEMA and NIBS Develop HAZUS to Reduce Earthquake Risk Nationwide

One of the first steps in preparing for a disaster is to estimate potential impacts, enabling those who must deal with such events to make informed decisions regarding uses of personnel and resources. To enhance this planning process, FEMA, as part of the National Earthquake

Hazards Reduction Program, is sponsoring the development of HAZUS, a standard model that will greatly enhance earthquake loss estimates by local, state, and regional public officials. The National Institute of Building Sciences (NIBS) is conducting the research and coordinating the effort. The model will also be used to prepare rapid loss estimates following actual earthquakes and to estimate the nationwide risk of losses due to quakes.

HAZUS, which uses a geographic information system, will provide communities with mapped estimates of the severity of ground shaking, damaged buildings, casualties, people displaced from their homes, damage to transportation systems, disruption of electrical and water utilities, and costs of repair. The HAZUS inventory data collection module, which is being pilot-tested in 19 states, can incorporate property tax assessment data and other local resources. HAZUS itself will be available in January 1997 and will be used in regional training workshops for all 50 states.



The project is overseen by an eight-member project work group that provides technical oversight and an 18-member project oversight committee made up of user representatives in the earthquake community.

The success of the earthquake loss estimation methodology used in HAZUS has led to a new initiative to expand HAZUS so that it can be used to estimate losses from damaging winds and floods. Committees are currently being formed to prepare work plans for these projects.

For further information about HAZUS, contact *Philip Schneider, Earthquake Loss Estimation Methodology Study, National Institute of Building Sciences, 1201 L Street, N.W., Washington, DC 20005; (202) 289-7800; fax: (202) 289-1092; or Fred Sharrocks, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; (202) 646-2796; fax: (202) 646-4596*.



## The Evolving Role of Community-Based Organizations in Disaster Recovery

The role of community-based organizations (CBOs) in disasters has changed significantly in recent years. The changes can be seen by focusing on three points in time: following the 1989 Loma Prieta earthquake, following the 1994 Northridge earthquake, and the present, which is a time of intense planning and training.

### Loma Prieta

Before the Loma Prieta earthquake, disaster plans and policies were based on a social model that assumed most dwellings contained middle-class households that purchased insurance, possessed financial resources, and experienced stable employment. However, most of the CBOs that were impacted by the Loma Prieta earthquake in the San Francisco/Oakland area in 1989 served populations that were especially vulnerable to social upheaval due to poverty, lack of English language skills, disability, irregular immigrant status, or other conditions. The special problems faced by these populations after the earthquake had not been considered in disaster recovery plans.

A large network of CBOs in the Bay Area mobilized to confront this situation. Using methods that included publicity, demonstrations, and threat of legal action, they forced reconsideration of policies that denied service to these most vulnerable populations.

In particular, the American Red Cross was criticized when it was learned that the organization intended to follow its custom of transferring to its national disaster fund contributions that were donated for this event, but that remained unspent after all traditional Red Cross services were provided. Threatened with a lawsuit and loss of community trust, the Red Cross revised its plan and created a substantial fund for planning, community organizing, and training.

As a result, six coalitions of CBOs were formed that established highly developed plans for work in disaster relief and recovery. These plans call for CBOs to be organized into functional groups, such as food agencies, health service agencies, and homeless service agencies. Each sector developed a plan for how its agencies will operate following a disaster and established forms of

cooperation among the organizations. At a higher level, all of the sectors worked together to develop a community-wide plan. As an added benefit, these groups established formal ties with their respective county disaster planning organizations, ensuring that, in future disasters, the efforts of CBOs would be coordinated with public agencies, and, to some extent, that CBO work would be eligible for government reimbursement.

Fortunately, an added bonus has been a gradual rapprochement between the American Red Cross and many of the CBOs. This process started first in the Bay Area, where the special training fund was first established, and has been spreading throughout California as CBOs in other areas learn about, and then learn from, the Bay Area model.

A crucial question regarding the future of these alliances is whether they will be able to survive as effective entities once the Red Cross money runs out. The best hope is for them to have made themselves an integral and indispensable part of their local governments' emergency plans by that time.

### Northridge

The federal response to the Northridge earthquake was different from that of earlier disasters in several respects. For one, the Federal Emergency Management Agency moved in quickly and effectively. Second, from the beginning there was communication and coordination among federal, state, and county governments and CBOs that far exceeded what had existed in prior disasters. As an example, staff from the local information and referral service were asked to be in the Disaster Application Centers (DACs) to help victims solve problems that did not fall under the purview of government agencies or the Red Cross.

Part of the reason for the changed relationships among government and CBOs was that government had become aware that it was not able to meet all the needs of all disaster victims. Increased concentrations of populations that are especially vulnerable to hazards because of poverty or other factors and living in high risk areas create postdisaster social service needs with which

governments may simply not be able to cope. The agencies that can work most effectively with these populations are often the CBOs that had served them before the disaster.

### The Present

Following Northridge, the community training of CBOs, begun by the Red Cross in the Bay Area, has spread to many other communities. There are now local, state, and national disaster preparedness programs for CBOs offered by a variety of agencies.

For many government disaster planners, CBOs represent an unknown, untested, and untrusted resource. Only time and positive experience will fully resolve this ambivalence. In the meantime, the fact that CBOs are organizing themselves into community-wide structures with formal tables of organization and the fact that they are taking the issues of training and exercises seriously should help to allay planners' nervousness. Where there are formal agreements for coordination between government and private agencies, there is also the possibility of including CBOs in major city- or county-wide disaster exercises. Working together in joint exercises can go far toward breaking down barriers.

In several areas, government disaster organizations have developed formal relationships with the local coalition of CBOs involved in disaster preparedness. The highest level of coordination is in those places where the coalition has a designated seat in the local emergency operations center (EOC). This is the case in Riverside and Alameda counties, California. In Los Angeles County, the local Volunteer Organizations Assisting in Disasters (VOAD) does not have a seat in the EOC, but

does have a direct ink with the EOC through county departmental EOCs. In Dade County, Florida, staff from the local information and referral service go to the emergency communications center to handle the non-emergency calls that typically flood 9-1-1 emergency phone lines during a disaster.

CBOs want to be involved in postdisaster work in a planned and effective way. However, it is possible that many of them have not faced the prospect that their disaster work may win them the thanks of the community but not reimbursement for their direct extraordinary expenses. Given that most CBOs have few financial reserves, they might have to choose between providing services to people with immediate disaster-related needs (and running the risk of bankrupting their organization) and being unable to meet their clients' needs in the future. As CBOs become more fully integrated into a community's overall disaster plan, perhaps financing their disaster work will become less haphazard. Until then, however, it is a perilous situation for them.

Burt Wallrich  
INFO LINE of Los Angeles

INFO Line of Los Angeles is a county-wide free information and referral service that links people who have human service needs with the programs that can help them. Since 1992, it has been heavily involved in postdisaster work, operating the county's disaster information hotline, assigning staff to disaster application centers, providing training for hundreds of CBOs, and playing a key role in Emergency Network Los Angeles.

A version of this paper first appeared as part of the First Internet Disaster Prevention and Limitation Conference. The complete text is available from *Burt Wallrich*; (818) 350-1841 ext. 2109; fax: (818) 442-6940; e-mail: [hn0264@handsnet.org](mailto:hn0264@handsnet.org)



## ON THE LINE II

### FEMA Mitigation Directorate Assists in Developing Model Planning Legislation

FEMA's Mitigation Directorate has entered into an interagency agreement with the Department of Housing and Urban Development (HUD) to support the American Planning Association's (APA) "Growing Smart" (GS) project—a multiyear effort to help states modernize statutes affecting planning and the management of community growth and change. The project will aid the development of the next generation of model planning laws and procedures. Through GS, APA will assist decision makers in evaluating alternative planning

approaches for state, regional, and local authorities. HUD serves as the lead federal agency, while the Environmental Protection Agency, Department of Agriculture, Federal Highway Administration, Federal Transit Authority, and several private foundations also provide financial support.

The principal product of GS will be a guidebook containing model legislative language with commentary. A continuum of legislative alternatives will be presented, and the book will not dictate one particular approach.



The guidebook is being developed in three phases: Phase I, which will be available soon, deals with state and regional planning; Phase II deals with local planning; and Phase III will focus on implementation tools and administrative procedures. APA will also establish a national planning statute clearinghouse and data base of legislative materials related to planning.

The target audience of GS will be officials in the executive and legislative branches of state government in offices with missions related to housing, economic development, transportation, community revitalization, and the environment—in other words, any office dealing with land use and the built environment. The audience will also include officials serving regional councils of government, regional planning agencies, and local officials.



A directorate will guide product development. It is composed of eight national organizations representing elected officials: Council of Governors Policy Advisors, Council of State Legislatures, National League of Cities, U.S. Conference of Mayors, National Association of Counties, National Association of Regional Councils, Council of State Community Development Agencies, National Association of Towns and Townships, and APA. As a sponsor, FEMA is an ex officio member also contributing to the guidebook's content and format. The process of guidebook development is open, and any individual or group may provide comments and/or information.

### FEMA's Role

Generally only community planners in areas that have experienced continuous disasters, such as Florida and California, recognize and make use of planning tools and

strategies to influence construction in hazardous areas or the implementation of incentives for retrofitting existing construction. Thus, there is a need for further research to ensure that these tools become more widely used in other regions. Through its participation in GS, FEMA is identifying and promoting the use of promising planning approaches that have not traditionally been used for hazard mitigation.

FEMA wants to ensure that the appropriate authorities exist within state law to provide the tools necessary for state and local governments to identify and manage their unique hazards and risks. Further, by including hazard mitigation in the GS legislative models, planning professionals will be prompted to consider natural hazards when making land-use and development decisions. In so doing, mitigation will be seen by planners as an important component in local and state land-use policy.

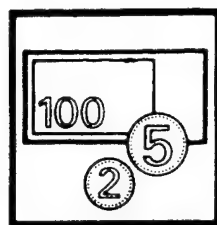
Indeed, in Phase I, reducing the effects of natural hazards on people and property was articulated as one of the fundamental goals of state, regional, and local planning, and specific examples of state legislation and planning tools used for mitigating hazards will be included in the guidebook. Achieving mitigation through the local planning process will follow in Phase II (now underway), as model comprehensive plan elements are developed (including a hazard mitigation element), and in Phase III.

### A Call for Information

Because GS focuses on the local planning process during Phase II, FEMA is interested in obtaining local comprehensive or general plans that address natural hazards and mitigation issues through a separate element or chapter, and/or by articulating policies related to hazard mitigation. Specifically, FEMA would like to receive plans that integrate the concept of reducing natural hazard damage with the local planning process. This does not include stand-alone mitigation plans. Anyone forwarding such plans should indicate what implementing tools or strategies are used to carry out the mitigation policies. Looking ahead to Phase III of GS, FEMA will be interested in obtaining examples of zoning ordinances, special purpose ordinances and other requirements, and any other development regulations used specifically to advance mitigation. The agency is also interested in learning about any local incentives that encourage mitigation for both existing and new development.

Anyone with such information is asked to forward it to *Cecelia Rosenberg, FEMA Project Officer for Growing Smart, FEMA-MT, Room 416, 500 C Street, S.W., Washington, DC 20472; fax: (202) 646-4387; e-mail: crosenbe@fema.gov.*

For information about Growing Smart, contact *Stuart Meck, American Planning Association, 122 South Michigan Avenue, Suite 1600, Chicago, IL 60603-6107; (312) 431-9100; e-mail: smeck@planning.org.*



## CONTRACTS AND GRANTS

**Strategic Renewal of Large Floodplain Rivers**, National Science Foundation, \$271,803, 36 months. Principal Investigator: *John B. Braden, Department of Agricultural and Consumer Economics, 300C Mumford Hall, MC 710, University of Illinois-Urbana-Champaign, Urbana, IL 61801; (217) 333-1253; e-mail: j-braden@uiuc.edu.*

Using the Illinois River, which is one of only three large floodplain river systems in the U.S. that demonstrate an appreciable annual flood cycle, this project will develop a model that integrates river hydrology, ecology, and economy to simulate the interactions of floodplain and river uses, including agriculture, navigation, recreation, commercial fishing, commercial forestry, and species carrying capacity. The model will also incorporate a policy component examining the effects of these uses and water management on systems outcomes.

**Local Tsunami Effects and Their Mitigation Measures**, National Science Foundation, \$330,600, 36 months. Principal Investigators: *Harry H. Yeh, Department of Civil Engineering, 167 Wilcox Hall, University of Washington, Seattle, WA 98195; (206) 545-8655; fax: (206) 543-1543; e-mail: harryeh@ce.washington.edu;* and *Catherine M. Petroff, Department of Civil Engineering, 165 Wilcox Hall, University of Washington, Seattle, WA 98195; (206) 545-7594; fax: (206) 543-1543; e-mail: cpetroff@ce.washington.edu.*

Earthquake-triggered tsunamis can reach a height of more than 10 meters, causing extensive flooding, property damage, and loss of life. This project is part of a comprehensive and integrated research program undertaken by three organizations to understand local tsunami effects on human-made and natural structures in order to determine effective mitigation measures. The University of Washington will conduct tsunami experiments in a specialized, three-dimensional wave basin.

A grant to Southern Methodist University (\$239,527, 36 months) will enable researchers to numerically simulate waves and their interaction with structures. Principal Investigators: *Peter E. Raad, Department of Mechanical Engineering, Southern Methodist University, Dallas, TX 75275-0337; e-mail: peter@seas.smu.edu;* and *David B. Johnson, Department of Mechanical Engineering, Southern Methodist University, Dallas, TX 75275-0337; (214) 768-3126; fax: (214) 768-1473; e-mail: dbj@seas.smu.edu.*

A grant to Urban Regional Research (\$70,191, 36 months) will enable staff there to conduct field examinations of tsunami damage and identify social vulnerability patterns that will guide the other experiments. Principal Investigator: *Jane Preuss, Urban Regional Research, 1809 7th Avenue, Suite 1000, Seattle, WA 98101-1313; (206) 624-1669.*

**Adoptions of Earthquake Hazard Adjustments by Households and Complex Organizations**, National Science Foundation, \$399,774, five years. Principal Investigator: *Michael K. Lindell, Administrative Sciences Program, George Washington University, 2136 Pennsylvania Avenue, N.W., Washington, DC 20052; (202) 496-8380; fax: (202) 676-5232; e-mail: mlindell@gwis2.circ.gwu.edu.*

This research will assess differences in the extent to which social units in areas with different levels of seismic vulnerability vary in their adoption of earthquake hazard adjustments; it will also identify variables predicting those differences in adoption. The study will examine households and complex organizations, particularly private businesses and government agencies, in regard to preparedness, mitigation, and earthquake impacts such as damage, death, and loss of organizational function. The research will be conducted at areas of high (southern California) and medium (western Washington) seismic risk.

**Effect of Earthquakes on Urban Highway Infrastructure Productivity**, National Science Foundation, \$399,387, 24 months. Principal Investigators: *James E. Moore, Peter Gordon, and William J. Petak, University of Southern California, University Park, Los Angeles, CA 90007-4363. Contact William Petak, Institute of Safety Systems Management, Mail Code 0021, University of Southern California, Los Angeles, CA 90089-0021; (213) 740-2411; fax: (213) 740-5943; e-mail: petak@mizar.usc.edu.*

Recent earthquakes have demonstrated that urban infrastructure failures in general and highway system failures in particular can cause significant economic loss. This project uses a multidisciplinary approach to examine the effect of earthquakes on urban highway infrastructure by combining civil engineering, urban planning, eco-

nomic, and public policy analyses. It will try to fill the gap between traditional engineering and socioeconomic and public policy studies in order to develop innovative methods that governments can use to reduce risk and to develop an experimental civil infrastructure curriculum for the University of Southern California.

**Business and Disasters: Consequences of Disaster Victimization for Businesses and Business Districts**, National Science Foundation, \$237,095, 24 months. Principal Investigators: *Kathleen J. Tierney and Joanne M. Nigg, Disaster Research Center, University of Delaware, Newark, DE 19716; (302) 831-6618; fax: (302) 831-2091; e-mail: tierney@udel.edu.*

This project addresses three related questions: 1) What longer-term consequences do disasters have for individual businesses? 2) What factors are associated with differential disaster outcomes for businesses? and 3) What consequences do heavy and concentrated damage to business and commercial districts have for business activity in highly damaged areas? The project will focus on Santa Cruz County, California, which suffered heavy damage in the 1989 Loma Prieta earthquake, and compare it to southern Dade County, Florida, which sustained major damage in 1992 from Hurricane Andrew.

**Sociopolitical Determinants of Perceived Risk**, National Science Foundation, \$149,946, 24 months. Principal Investigators: *Paul Slovic and James Flynn, Decision Sciences Research Institute, 1201 Oak Street, Eugene, OR 97401-3519; (503) 485-2300. Contact Paul Slovic, Department of Psychology, University of Oregon, Eugene, OR 97403-1227; (541) 346-4921; e-mail: pslovic@uoregon.uoregon.edu.*

Numerous studies have found that the level of perceived risk is higher for women than for men across a wide range of hazards. Although many explanations have been offered for this difference, including biological and social factors, a recent study found that the difference was primarily due to a low level of perceived risk by white males, with no discernible gender differences among nonwhites. Thus, this research will test the hypothesis that sociopolitical factors such as status, power, alienation, and trust play major roles in perception and acceptance of risk.

**Decisions and Interactions Under Risk and Uncertainty Within and Across Cultures**, National Science Foundation, \$89,471, 24 months. Principal Investigator: *Christopher Hsee, Graduate School of Business, University of Chicago, 5801 South Ellis Avenue, Chicago, IL 60637-1404; (773) 962-8805.*

This project examines cross-cultural differences in the conceptualization of risk, uncertainty, and ambiguity, in risk perception and risk preference, and in the prediction of risk preferences of others (e.g., opponents in a negotiation), where the other is either from the same or a different culture. Data will be collected in five countries: the U.S., Germany, Poland, Hong Kong, and China. Two questions guide the research: 1) On what dimensions related to

decision-making under risk and uncertainty do cross-cultural differences occur? 2) What are the causal factors that produce these differences?

**Uncertainty and Risk Analysis Under Extreme Hydrologic Events**, National Science Foundation, \$269,977, 36 months. Principal Investigators: *Jose D. Salas, Department of Civil Engineering, A311 Engineering Research Center, Colorado State University, Fort Collins, CO 80523; (970) 491-8460; e-mail: jsalas@lance.colostate.edu; and Duane C. Boes, Department of Statistics, Room 205, Colorado State University, Fort Collins, CO 80523; (970) 491-7281; e-mail: boes@lamar.colostate.edu.*

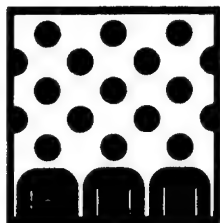
This project will re-examine the design criteria for hydraulic structures, such as levees and spillways, for withstanding extreme events such as floods and their capacity for managing excesses and scarcity of water. The results will contribute to the management of flood risk and drought episodes.

**A Reassessment of State Roles in Disaster Mitigation and Management**, National Science Foundation, \$309,999, 36 months. Principal Investigators: *Elliott Mittler and Daniel J. Alesch, Public and Environmental Affairs, Rose Hall 324, University of Wisconsin-Green Bay, 2420 Nicolette Drive, Green Bay, WI 54311-7001; (414) 465-2045; fax: (414) 465-2791; e-mail: aleschd@uwgb.edu.*

Following Hurricane Hugo, the Loma Prieta earthquake, Hurricane Andrew, Hurricane Iniki, and the Northridge earthquake, some states undertook significant disaster mitigation initiatives, while others did not. This study examines why and how several states decided to take on responsibilities for seismic and hurricane safety. Fourteen case studies will be conducted in these states to gather information on key policy officials, commissions, agencies, and state associations. In addition to its theoretical contribution, one possible benefit of the study will be to shed light on how states can improve their ability to incorporate useful technologies initiated by other states.

**Kobe Reconstruction: Community Planning, Design, and Construction Practices**, National Science Foundation, \$276,719, 36 months. Principal Investigators: *Jane Preuss, Craig Comartin, and Christopher Arnold, Urban Regional Research, 1809 7th Avenue, Suite 1000, Seattle, WA 98101-1313; (206) 624-1669.*

This project focuses on reconstruction following the quake that struck Kobe, Japan, on January 17, 1995. The study will incorporate urban planning, architecture, urban design, and engineering perspectives to compare Kobe recovery efforts with recent experiences in the U.S. Three basic levels of reconstruction will be investigated: 1) replacement of individual buildings on a single site; 2) replacement of groups of buildings on the same site within the existing general street pattern (residential tracts); and 3) replanning and replacement of neighborhoods involving changes in street alignment and creation of new town complexes.



## CONFERENCES AND TRAINING

These are the latest conference announcements received by the Hazards Center. A comprehensive list of hazard/disaster meetings is posted on our World Wide Web site:

<http://adder.colorado.edu/~hazctr/Home.html>

**Retrofitting Flood-Prone Residential Buildings Course.** Sponsors: Federal Emergency Management Agency (FEMA) Mitigation Directorate and Emergency Management Institute. Emmitsburg, Maryland: December 9-13, 1996 and February 24-28, 1997. This 4½-day course, held at FEMA's National Emergency Training Center, will cover current engineering principles and practices for retrofitting flood-prone residential buildings (see the *Observer*, Vol. XX, No. 3, p. 16). For more information, contact Dan Bondroff, National Emergency Training Center, 16825 South Seton Avenue, Emmitsburg, MD 21727; (301) 447-1278.

**Fundamentals of Seismic Design Course.** Sponsors: Structural Engineers Association of Illinois (SEAOI) and Building Seismic Safety Council. Chicago, Illinois: December 13-14, 1996. This course is intended to acquaint structural engineers with the basics of seismic design of buildings and to review requirements in the model building codes. For more information, contact SEAOI, Suite 1000, 203 North Wabash Avenue, Chicago, IL 60601; (312) 372-4198; fax: (312) 372-5673.

**International Disaster Recovery Association (IDRA) Seventh Annual Conference and Trade Show: Disaster Recovery, Contingency Planning, and Business Continuation Using Telecommunications.** Boston, Massachusetts: March 2-5, 1997. The 1997 IDRA conference will include telecommunications disaster recovery workshops, panel discussions, and exhibits. Topics to be covered include the Internet and disaster recovery, telecommunications earthquake preparedness, network alternatives, wireless disaster recovery planning, preparing and testing a disaster recovery plan, legal issues, emergency notification systems, and case studies. For a conference announcement, contact BWT Associates, P.O. Box 4515, Turnpike Station, Shrewsbury, MA 01545; (508) 845-6000; fax: (508) 842-2585.

**Eighth Annual Corporate Contingency Planning Conference and Exhibition.** Sponsor: *Disaster Recovery Journal*. San Diego, California: March 10-12, 1997. The annual *Disaster Recovery Journal* Contingency Planning Conference was one of the first meetings in the nation established to address business disaster planning. This year it includes general sessions, workshops on numerous aspects of contingency planning and business recovery, as well as additional pre- and post-conference hands-on workshops. For a conference booklet, contact Mercedes Knese, c/o *Disaster Recovery Journal*, P.O. Box 510110, St. Louis, MO 63151-0110; (314) 894-0276; WWW: <http://www.drj.com>.

**Wetlands '97: The Future of Wetland Assessment—Applying Science Through the Hydrogeomorphic Assessment Approach and**

**Other Approaches.** Sponsors: Association of State Wetland Managers (ASWM), U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, and others. Annapolis, Maryland: March 10-13, 1997. Wetlands '97 is intended for state, tribal, federal, and local government staff and officials; academicians; representatives of nonprofit organizations; and all others interested in the preservation and appropriate use of wetlands. The conference will address wetland assessment techniques, as well as regulatory, acquisition, restoration, land and water management, and other issues. The organizers are seeking contributions, and abstracts are due November 15. For more information, contact ASWM, P.O. Box 269, Berne, NY 12023-9746; (518) 872-1804; fax: (518) 872-2171; e-mail: [aswmi@aol.com](mailto:aswmi@aol.com).

**15th Annual EMS Today Conference and Exposition.** Cincinnati, Ohio: March 19-22, 1997. Besides covering a host of issues regarding emergency medicine provision and management, this meeting will include a track covering the latest equipment and techniques for emergency rescue. For more information, call: (800) 266-5367; or register on-line at: <http://www.jems.com>.

**Twelfth Annual Conference on Emergency Management Technology.** Sponsor: State and Local Emergency Management Data Users Group (SALEMDUG). Nashville, Tennessee: April 7-9, 1997. SALEMDUG is an association of government emergency management professionals who are particularly interested in the use of computers and computer networks in emergency management. The SALEMDUG annual meeting showcases new technologies and allows the participants to discuss the advantages and problems associated with both technical and the human aspects of computer use. Some of the proposed topics of this year's conference include: the National Communications System and the Cellular Priority Access Service, the HAZUS loss estimation technology (see p. 10 of this *Observer*), and potential impacts of information terrorism. Questions about the conference can be directed to the SALEMDUG '97 Conference Committee, c/o Tennessee Emergency Management Agency, 3041 Sidco Drive, Nashville, TN 37204-1502; Diane Pryor: (615) 741-2924; Pat Bohannon: (615) 741-1226, or (800) 258-3300.

**Seismological Society of America Annual Meeting.** Honolulu, Hawaii: April 9-11, 1997. The deadline for abstracts for this conference is January 7, 1997. The program committee is encouraging submissions for the following tentative special sessions: Earthquake Recurrence Rates/Prediction, Seismology and Society, Milestones in Seismology, Seismology Related to Volcanism, Seismic Tomography, Microseismicity and Neotectonics, Recent Events, Seismicity/Seismotectonics of the Circum-Pacific Region,



and Seismic Hazards and Emergency Response. For more information, contact Susan Newman, SSA, 201 Plaza Professional Building, El Cerrito, CA 94530; (510) 525-1782; fax: (510) 525-7204; e-mail: [snewman@seismosoc.org](mailto:snewman@seismosoc.org); WWW: <http://www.seismosoc.org/ssal/>.

**XXII European Geophysical Society General Assembly Session on Natural Hazards: Symposium on Techniques and Tools for Mapping Natural Hazards and Risk Impact on the Developed Environment.** Vienna, Austria: April 21-25, 1997. Because of escalating costs and conflicting economic priorities, most communities and nations are increasingly reluctant to invest in large structural measures to mitigate natural hazards. Consequently, warning systems and land-use regulation have become increasingly viable options. This symposium will evaluate current methods for predicting natural catastrophes and mitigating their impacts, particularly, new technological advances for improving hazard evaluation and risk reduction. Persons interested in contributing to the meeting should submit an abstract by December 15. For more information, contact the symposium convener, Fausto Guzzetti, CNR-IRPI, via della Madonna Alta, 126, I-06128 Perugia, Italy; tel: +39 75 505.4943; fax: +39 75 505.1325; e-mail: [fausto@kenoby.irpi.unipg.it](mailto:fausto@kenoby.irpi.unipg.it); WWW: <http://www.irpi.unipg.it/Events/EGS97/Forum.html>.

**Survive! Business Continuity Group Australia Sixth Annual Conference and Exhibition.** Melbourne, Australia: April 23-24, 1997. The mission of the Survive! Business Continuity Group is "to benefit member companies by promoting business continuity awareness while encouraging excellence in the disaster recovery, contingency planning, and business continuity industry on a global basis." The organization pursues these goals in several ways, including through national annual conferences. For more information about the organization, its activities, or the conference listed above, contact Survive! Secretariat, The Chapel, Royal Victoria Patriotic Building, Fitzhugh Grove, London SW18 3SX, U.K.; tel: 0181-874 6266; fax: 0181-874 6446; e-mail: [surviveuk@cityscape.co.uk](mailto:surviveuk@cityscape.co.uk); WWW: <http://www.survive.com>.

**Western Social Science Association Annual Conference.** Albuquerque, New Mexico: April 23-26, 1997. This conference will include a section on women's studies, and the organizers are soliciting papers on gender issues in disaster management/response. Proposals are due November 6, 1996. For more information, contact Jacqueline B. Stanfield, Department of Sociology, University of Northern Colorado, Greeley, CO 80639; (970) 351-2315; fax: (970) 351-2983; e-mail: [jbstanf@bentley.univnorthco.edu](mailto:jbstanf@bentley.univnorthco.edu).

**Landslides and Related Mitigative Measures.** Tehran, Iran: May 5-6, 1997. This meeting will cover stability analysis, stabilization and remedial measures, landslide hazard evaluation, instrumentation and monitoring, earthquake effects, rainstorm effects, instability in earth and rockfill structures, landslides and natural resources, landslides and human activities, and case studies. For details, contact Saeed Montazerolghaem, Geotechnical Division, IIEES, P.O. Box 19395/3913, Tehran, I.R. Iran; tel: 9821-256-4038; fax: 9821-258-8732.

**National Disaster Medical System (NDMS) 1997 Annual Conference.** Tampa, Florida: May 5-7, 1997. The 1997 NDMS conference will feature tracks focusing on public health; planning, management, and coordination; clinical medicine; field response; and health care facilities. In addition several parallel training courses will be offered prior to and during the meeting. For additional information, contact NDMS, Parklawn Building, Room 4-81, 5600 Fishers Lane, Rockville, MD 20857; (301) 443-1167; (800) 872-6367, ext. 44.

**Rescue Expo '97: Emergency Services Working Together.** Richmond, New South Wales, Australia: May 16-18, 1997. Rescue Expo '97 will give emergency service personnel and the public an opportunity to see and experience the latest products, technology, and services available for rescue and emergency response. Details are available from Rescue Expo '97 Organising Committee, P.O. Box 260, Kurrajong NSW, Australia 2758; tel: 045 77 3394; fax: 045 73 2564; WWW: <http://www.rpl.com.au/expo97>.

**1997 National Flood Conference.** Sponsor: Federal Emergency Management Agency, National Flood Insurance Program. Pittsburgh, Pennsylvania: May 19-23, 1997. Customer service is the tentative focus of the 1997 flood conference. The meeting is intended for representatives of all parts of the flood insurance industry, as well as floodplain management officials from all levels of government. To be added to the conference mailing list, contact Rebecca Reardon, Program Coordinator, National Flood Insurance Program Bureau and Statistical Agent, 10115 Senate Drive, Lanham, MD 20706; (301) 918-1439; fax: (301) 918-1479.

**Second International Wildland Fire Conference: Wildland Fire Management and Sustainable Development.** Sponsors: North American Forestry Commission's Fire Management Study Group, Food and Agriculture Organizations of the United Nations, and others. Vancouver, British Columbia, Canada: May 25-30, 1997. The goal of this meeting is to foster international cooperation and information sharing; it will bring together leading specialists to discuss issues, programs, and strategies surrounding wildland fire and sustainable development. The conference's five principal sessions will explore fire and sustainable development from environmental, economic, social, regional, and organizational perspectives. One entire day will be devoted to examining global issues regarding wildland fire. For more information contact the Conference Secretariat, Events by Design, 601-325 Howe Street, Vancouver, British Columbia, Canada V6C 1Z7; (604) 669-7175; fax: (604) 669-7083; WWW: <http://www.islandnet.com/~carleton/fire/fire.html>.

**1997 Society for Risk Analysis (SRA)-Europe Annual Meeting.** Stockholm, Sweden: June 15-18, 1997. The theme for the 1997 SRA-Europe meeting will be "New Risk Frontiers." A call for papers has been issued, and abstracts are due January 15, 1997. For specifics, contact Britt-Marie Drott Sjöberg, Conference Director, Stockholm School of Economics; tel: (46) 8 736 95 76; fax: (46) 8 30 72 25; e-mail: [pbmds@hhs.se](mailto:pbmds@hhs.se).

**Third International Airborne Remote Sensing Conference and Exhibition: Development, Integration, Applications, and Operations.** Sponsors: Environmental Research Institute of Michigan (ERIM) and others. Copenhagen, Denmark: July 7-10, 1997. This forum for the exchange of information about airborne remote sensing will include a section on "Emergency Situations: Oil and Chemical Spills, Natural Disasters, Search and Rescue Operations, and Forest Fires." The organizers are currently soliciting papers, and summaries are due December 13. Inquiries should be directed to ERIM/Airborne Conference, P.O. Box 134001, Ann Arbor, MI 48113-4001; (313) 994-1200, ext. 3234; fax: (313) 994-5123; e-mail: [wallman@erim.org](mailto:wallman@erim.org); WWW: <http://www.erim.org/CONF/conf.html>.

**Fourth Asia-Pacific Symposium on Wind Engineering.** Gold Coast, Queensland, Australia: July 14-16, 1997. This meeting will focus on wind characteristics and climate, wind tunnel modeling, computational modeling, building aerodynamics, disaster mitigation and insurance, building codes and regulations, and numerous other aspects of wind engineering. For details, contact Sally Brown, IVAPSOWE Secretariat, ICTE Conference, University of



Queensland, Brisbane, Queensland, Australia 4072; tel: 61 7 3365 6360; fax: 61 7 3365 7099; e-mail: sally@ceu.uq.oz.au.

*North-East Asia Symposium and Field Workshop on Landslide and Debris Flow (NEASFLD'97), including the International Field Workshop on Yangtze Gorges Landslides. Various sites across East and Central Asia: July 16-30, 1997.* This symposium will be held along the Yangtze River in Yichang (July 18), Chongqing (July 23) and Ala-mata (July 27). The main focus will be landslides and debris flow in the Sanxia Gorges area. Because the Yangtze River will be dammed by Sanxia Dam by the end of 1997, this trip represents a final opportunity to visit Sanxia Gorges. The meeting is intended to promote international cooperation and the exchange of information on landslide and debris flow mitigation techniques. For a further information, contact *Hirofumi Nakamura, Faculty of Agriculture, Tokyo University of Agriculture and Technology, 3-5-8 Saiwai-Cho, Fuchu-Shi, Tokyo 183, Japan; tel: (81) 423-675751; fax: (81) 423-647812; e-mail: lang@cc.tuat.ac.jp; WWW: http://www.tuat.ac.jp/~sabo/sanxia/index.html.*

*American Society for Public Administration (ASPA) 1997 Annual Conference. Philadelphia, Pennsylvania: July 19-23, 1997.* The ASPA conference includes sessions on emergency management and natural hazards. For details, contact *ASPA 1997 Annual Conference, 1120 G Street, N.W., Suite 700, Washington, DC 20005-3885; (202) 393-7878; fax: (202) 638-4952; e-mail: dcaspa@aol.com.*

*Ninth International Disaster Recovery Symposium and Exhibition. Atlanta, Georgia: September 15-17, 1997.* The *Disaster Recovery Journal's* second big meeting of 1997 will follow much the same format as the March meeting mentioned above. For specifics, contact *Mercedes Knese, c/o Disaster Recovery Journal, P.O. Box 510110, St. Louis, MO 63151-0110; (314) 894-0276; WWW: http://www.drj.com.*

*Assessment and Mitigation of Seismic Risk in Central America. Sponsor: Universidad Centroamericana "Jose Simeon Canas." San Salvador, El Salvador: September 22-27, 1997.* The principal objective of this seminar is to bring together the individuals and groups interested in the mitigation of seismic risk in Central America to exchange knowledge, experience, and ideas, and to promote collaboration at the regional level. In this regard, the organizers intend to propose the formation of a Central American Association of Earthquake Engineering. The conference will be held in English and Spanish. A call for papers has been issued, and abstracts are due December 15. For more information, including a list of conference topics, contact *Patricia Mendez de Hasbun, Departamento de Ingenieria Civil, Universidad Centroamericana "J.S. Canas," Apartado Postal (01) 168, San Salvador, El Salvador; fax: +503-273-8140, or +503-273-1010.*

*33rd American Water Resources Association (AWRA) Annual Conference and Symposium. Long Beach, California: October 19-23, 1997.* The 33rd Annual AWRA Conference and Symposium is composed of two parts. The conference portion will include sessions on approximately 16 different water resources topics. The symposium will deal with "Aquifer Storage and Recovery." A call for papers should be available by the end of November. To be added to the conference mailing list, contact the AWRA, 950 Herndon Parkway, Suite 300, Herndon, VA 22070-5531; (703) 904-1225; fax: (703) 904-1228; e-mail: awrahq@aol.com.

*Fourth International Emergency Planning Conference. Prague, Czech Republic: October 20-22, 1997.* The main theme of this conference will be environmental aspects of disasters, and special workshops will be dedicated to the vulnerability of advanced

systems, decision making under difficult circumstances, social science research, as well as reports on recent practical experiences from around the world. A call for papers has been issued, and abstracts are due by March 3, 1997. For a conference brochure or additional information, contact *Emergency Planning Education, Van Diemenstraat 78, 1013 CN Amsterdam, The Netherlands; tel: +31 (0) 20 624 4415; fax: +31 (0) 20 638 6609; e-mail: iwp@sx4all.nl.*

*Seismological Society of America Annual Meeting. Boulder, Colorado: March 16-18, 1998.* The 1998 SSA meeting will include contributed research papers on seismology, seismotectonics, seismic engineering, earthquake hazards, and related fields, with special sessions to be announced later. To be included in future conference announcements and calls for papers, contact *Susan Newman, SSA, 201 Plaza Professional Building, El Cerrito, CA 94530; (510) 525-1782; fax: (510) 525-7204; e-mail: sn Newman@seismosoc.org; WWW: http://www.seismosoc.org/ssa/.*

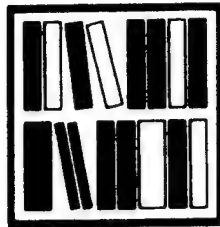
*Eleventh European Conference on Earthquake Engineering. Sponsors: European Association for Earthquake Engineering and French Association for Earthquake Engineering. Paris, France: September 6-11, 1998.* The technical program of this conference will cover engineering seismology; soil, rocks, and construction materials; linear and nonlinear modeling; civil engineering projects; active and passive isolation; industrial facilities, lifelines, and equipment; vulnerability, seismic risk, and strengthening; site effects; reliability analysis; and the current state of practice. The meeting will also include three special theme sessions on Eurocode 8 and national applications, seismic risk in the Mediterranean Basin, and postearthquake investigations. Abstracts are due July 31, 1997. For details, contact *XIth European Conference on Earthquake Engineering, AFPS Secretariat, 4, avenue du Recteur Poincare, 75782 Paris Cedex 16, France: tel: 33-1 40-50-28-34; fax: 33-1 45-25-61-51.*

## Conferences and Training from UNCRD

The United Nations Centre for Regional Development (UNCRD) in Nagoya, Japan has several workshops and conferences coming up on various aspects of disaster management, including:

- *Workshop on Development of GIS for Disaster Management (Part of the UNCRD 25th Anniversary Programme). Nagoya, Japan: December 12, 1996.*
- *Workshop on Integrated Approaches to Cyclone Disaster Management and Regional Development. Dhaka, Bangladesh: February 1997.*
- *Fifth United Nations Open Forum: Suggestions for Disaster Management—A Decade of International Disaster Management. Nagoya, Japan: February 8, 1997.*

For details, contact *UNCRD, Nagoya 1-47-1, Nakamura-ku, Nagoya 450, Japan; tel: (+81-52) 561-9377; fax: (+81-52) 561-9375; telex: J59620 UNCENTRE; cable: UNCENTRE NAGOYA; e-mail: rep@uncrd.or.jp.*



## RECENT PUBLICATIONS

### All Hazards

**World Disasters Report 1996.** 1996. 198 pp. \$65.00, hardcover; \$29.95, paperback. Order from Oxford University Press, Walton Street, Oxford OX2 6DP, U.K.; (44) (1536) 454534; fax: (44) (1536) 454518.

George Weber, Secretary General of the International Federation of Red Cross and Red Crescent Societies, states in his introduction to the 1996 *World Disaster Report*, "fewer [disaster assistance] resources do not imply any reduction in numbers of people in need." Building on this theme that relief agencies are having to find ways to do more with less, this report examines two key issues: 1) population movements and protection of the displaced, and 2) global food supplies. It covers nutrition and food aid, nutritional indicators, and the provision of relief to enhance development, as well as trends in aid giving, disaster trends, and the work of the International Federation.

**Managing Catastrophe Risk.** 1996. 42 pp. \$40.00. Copies can be ordered from Customer Service, Insurance Services Office, Inc., 7 World Trade Center, 14th Floor, New York, NY 10048-1199; (800) 888-4150 or 888-4476.

Since 1989, the surge in catastrophic losses due to natural disasters has caused insurers, regulators, legislators, and others to question whether the property/casualty insurance industry has the financial capacity to handle the increasing disaster risk. This report contains the results of a study of insurers, conducted by the Insurance Services Office (ISO), that analyzed exposure and estimated the potential effects of earthquakes and hurricanes on the insurance industry. ISO determined that 73 of the 80 insurer groups studied manage their exposures well enough that the chance of insolvency due to catastrophe in any given year is less than 1%. For the remaining seven groups, probability of insolvency was greater than 1% but less than 5%. This document provides information on recent catastrophes, reinsurance, catastrophe models used by insurers to predict losses, volatility by line of insurance, expected losses, differences in exposure among insurers, the costs of catastrophe reinsurance, and proposals to address the catastrophic insurance difficulties.

**Legisbrief: Planning for Natural Disasters.** Laura Hagg Nelson. March 1996, Vol. 4, No. 15. 2 pp. \$3.50.

**State Legislative Report: Disaster Mitigation.** Laura Hagg Nelson. June 1996, Vol. 21, No. 7. 8 pp. \$5.00.

**"When Disaster Strikes," State Legislature.** Laura Hagg Nelson. June 1996. \$3.95.

All three items can be ordered from the National Council of State Legislators, 1560 Broadway, Suite 700, Denver, CO 80202; (303) 830-2200; fax: (303) 830-8003.

The *Legisbrief* summary describes the need for states to prepare for and mitigate the effects of natural disasters and covers the role of the Federal Emergency Management Agency; the four phases of emergency management (mitigation, preparation, response, and recovery); types of federal assistance; and state funding mechanisms to cover the costs of disasters.

The *State Legislative Report* describes efforts by states to implement cost-effective ways to respond to disasters. It discusses multiobjective planning, the national mitigation strategy, hazard identification and risk assessment, research and technology transfer, public education, federal funding for mitigation, and state roles in program development.

"When Disaster Strikes" describes the need for states to pay attention to natural disasters and discusses why mitigation is a question of "paying now or paying later." In particular, the article describes the Missouri Community Buyout Program to purchase homes that have been flooded repeatedly and to turn them into open space, wetlands, or recreation areas.

**Abstracts for the Pan Pacific Hazards '96 Conference and Trade Show, Vancouver, British Columbia, July 29-August 2, 1996.** 1996. 320 pp. \$29.95 (U.S.), plus \$5.00 shipping. Available from the University of British Columbia, UBC Press, 6344 Memorial Road, Vancouver, BC, Canada V6T 1Z2; (604) 822-5959; fax: (800) 668-0821; e-mail: [orders@ubcpres.ubc.ca](mailto:orders@ubcpres.ubc.ca); WWW: <http://www.ubcpres.ubc.ca>. Also available on CD-ROM for \$30.72 from the Disaster Preparedness Resource Center, University of British Columbia, 4th Floor, 2206 East Mall, Vancouver, BC, Canada V6T 1Z3; (604) 822-5254; fax: (604) 822-6164; e-mail: [dprc@unixg.ubc.ca](mailto:dprc@unixg.ubc.ca). The abstracts are also available on the World Wide Web: <http://hoshi.cic.sfu.ca/~anderson/hazards96>.

The printed volume contains the abstracts of papers presented at Pan Pacific Hazards '96, the first international conference held in Canada to focus on tsunamis, earthquakes, and volcanoes. It includes abstracts on earthquake response, the use of geographic information systems, business resumption planning, community crisis management, the use of volunteers in rescue operations, and hundreds of other topics. Drawn from a variety of disciplines, the abstracts include the names of the

presenters and/or authors, their affiliation, and complete contact information for obtaining the full papers.

The CD-ROM contains all the abstracts in the printed document as well as the full text of 90 conference papers. Abstracts can be accessed by title, name of author, country of author, and keyword.

**Exploring Risk Communication.** Jan M. Gutteling and Oene Wiegman. 1996. 236 pp. \$118.00 (U.S.). Available from Kluwer Academic Publishers, Order Department, P.O. Box 358, Accord Station, Hingham, MA 02018-0358; (617) 871-6600; fax: (617) 871-6528; e-mail: [kluwer@wkap.com](mailto:kluwer@wkap.com).

*Exploring Risk Communication* presents a systematic planning approach for providing information on technical, environmental, and natural risks—an approach the authors hope will improve communication between private and public information sources and the public. Based on studies of public reaction to risk and public ability to process risk information, this book reviews current research, examines the issues of perceived trust and credibility of risk communication sources, discusses risk messages and the framing of risk, and emphasizes the roles of the mass media in influencing public perceptions. The authors also review the new interactive media.

**Field Guide on Rapid Nutritional Assessment in Emergencies.** 1996. 63 pp. \$7.50 (U.S.).

**Health Laboratory Facilities in Emergency and Disaster Situations.** 1996. 168 pp. \$11.25 (U.S.).

Both items are available in English only from the World Health Organization, Regional Office for the Eastern Mediterranean, P.O. Box 1517, Alexandria (21511), Egypt. Checks should be payable to the World Health Organization.

The eastern Mediterranean region has been affected by many emergencies in recent years, both natural and human-caused. In almost every situation, nutrition of the affected populations was endangered. From this experience, the World Health Organization has learned that the nutritional status of affected populations is important information if adequate relief and food supplies are to be provided. The *Field Guide* offers step-by-step information on designing, planning, implementing, and reporting nutritional assessments.

The second volume offers detailed guidance on how to provide basic laboratory services in disaster situations, including creating contingency plans, setting up laboratories, and working with other agencies in emergency and disaster relief.

**Migrant and Seasonal Farm Workers Handbook.** 1996. Free. To obtain, contact R. Douglas Propher, Maryland Emergency Management Agency, 2 Sudbrook Lane East, Pikesville, MD 21208; (410) 486-4422.

The difficulties involved in providing social services to migrant and seasonal farm workers only increase when disasters occur. Transience, poverty, limited education, and cultural differences isolate these groups and inhibit contact between them and government and private organizations that offer assistance. This handbook presents information on these populations and the agencies and programs that serve their needs. It is available in print or on diskette in Wordperfect 6.0.

### Floods and Severe Weather

**Forum for Applied Research and Public Policy, Vol. 11, No. 3 (Fall 1996).** \$9.00, single issue; \$28.00, individual subscription (four issues); \$36.00, institution subscription. To order,

contact the Energy, Environment, and Resources Center, 600 Henley Street, Suite 311, University of Tennessee, Knoxville, TN 37916-9989; (423) 974-4251; fax: (423) 974-8491; e-mail: [forum@eerc.gw.utk.edu](mailto:forum@eerc.gw.utk.edu).

This issue of *Forum*, published by the Oak Ridge National Laboratory and the Energy, Environment, and Resources Center at the University of Tennessee, contains a section on flood policy issues in the U.S. The articles include: "Midwest Floods Channel Reforms," by Mary Fran Myers; "U.S. Floodplain Policy Pursues Higher Ground," by Gerald Galloway; "Lessons Drawn from the 1993 Flood," by Larry A. Larson; "Federal Policy Yields to Floodwaters of '93," by Scott Faber; "Is Federal Disaster Relief at Odds with Mitigation?" by Raymond J. Burby; "Hard Lessons Linger in Wake of 1993 Flood," by Graham A. Tobin; "Floodplain Management Insures against Losses," by Rebecca Quinn; "Midwest Floods of 1993: The St. Charles Experiences," by Miriam Anderson; and "The Power of Water in Des Moines, Iowa," by Andrea Hauer.

**Flood Guide for Lenders and Servicers.** 1996. 102 pp. \$29.95. Order from the National Lenders' Insurance Council, P.O. Box 10874, Burbank, CA 91510-0874; (800) 338-5511.

The National Lenders Insurance Council (NLIC) is a nonprofit trade association that focuses on insurance issues affecting the real estate lending and servicing industries. This NLIC guide provides general information on the history of flood insurance, the differences between flood and hazard insurance, the National Flood Insurance Program, the role of the private sector in flood insurance provision, flood zones, changes in flood insurance brought about by the National Flood Insurance Reform Act of 1994, borrower fees, notification, and unique problems and special cases.

**Procedural Guidelines for Estimating Residential and Business Structure Value for Use in Flood Damage Estimation.** IWR Report 95-R-9. 1995. 105 pp. Free.

**Significance in Environmental Project Planning: Resource Document.** IWR Report 96-R-7. 1996. 89 pp. Free.

**An Introduction to Risk and Uncertainty in the Evaluation of Environmental Investments.** IWR Report 96-R-8. 1996. 119 pp. Free.

These documents are available from the U.S. Army Corps of Engineers, Water Resources Support Center, Institute for Water Resources, 7701 Telegraph Road, Alexandria, VA 22315-3868.

The *Procedural Guidelines* documents methods for calculating business and residential structure value and their use by the Corps of Engineers in flood damage reduction studies.

*Significance in Environmental Project Planning* outlines the process of determining "resource significance" of ecosystems and their environmental amenities when selecting, planning, and evaluating environmental restoration projects. Developed primarily for Corps field planners, it describes resources available to aid environmental planning.

Incorporating risk and uncertainty into planning studies can also be a means of improving the decision making process. *An Introduction to Risk and Uncertainty* offers methods for dealing with such uncertainties in environmental planning.

**Lightning Safety and Hazard Mitigation.** 1996. 30 pp. \$15.00. Available from the National Lightning Safety Institute, P.O. Box 778, Louisville, CO 80027; (303) 666-8817; fax: (303) 666-8786; e-mail: [rkithil@ix.netcom.com](mailto:rkithil@ix.netcom.com); WWW: <http://www.lightningsafety.com>.

Lightning is one of the leading causes of weather-related deaths and injuries in the U.S., and the National Fire Protection Association estimated that lightning caused \$139 million in residential fire losses from 1989 to 1993. This report contains an overview of the effects of lightning and presents techniques for mitigating lightning damage and injuries. It includes discussions of the impacts of lightning on structures and structure contents; electrical current and the human body; and implementing lightning safety. NLSI also offers a six-minute video on lightning safety for \$25.00.

**An Investigation into Freezing and Bursting Water Pipes in Residential Construction.** Jeffrey R. Gordon. Research Report 96-1. 1996. 52 pp. Free. A limited number of copies are available from the Insurance Institute for Property Loss Reduction (IIPLR), 72 Tremont Street, Suite 510, Boston, MA 02108-3910; (617) 722-0200; fax: (617) 722-0202.

Damage from burst residential water pipes due to freezing weather is a widespread and costly problem for both homeowners and insurers, particularly in the southern U.S. The IIPLR estimates that these costs have exceeded \$4 billion in the past decade. State Farm Fire and Casualty Company sponsored research into this problem by the Building Research Council, and this report contains the results of that effort. The first phase of the research featured laboratory tests of water pipes subjected to freezing temperatures to improve understanding of the physical process and to identify burst protection strategies. The second phase involved field tests of pipes during freezing weather. The report provides descriptions of the most effective loss prevention strategies and discusses mitigation efforts that involve building practices, code review, pipe insulation, public education, and homeowner action to prevent damage.

### Hurricanes and Tropical Storms

**Hurricane Iniki's Impact on Kauai.** Arthur N.L. Chiu, Gregory L.F. Chiu, Charles H. Fletcher III, Hans-Jurgen Krock, J. Kenneth Mitchell, and Thomas A. Schroeder. 1995. 156 pp. \$35.00, North America; \$70.00, beyond the U.S., Canada, and Mexico. Copies are available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161; (703) 487-4650; fax: (703) 321-8547; e-mail: orders@ntis.fedworld.gov. Specify order number PB96-177019INB.

Shortly after 3:00 p.m. on September 11, 1992, Hurricane Iniki struck the south shore of the Hawaiian island of Kauai. More than 90% of homes, buildings, and structures were damaged. The University of Hawaii at Manoa, the Structural Engineers Association of Hawaii, and the Wind Engineering Research Council jointly performed postdisaster studies, the results of which are contained in this report. **Hurricane Iniki's Impacts on Kauai** focuses on the meteorological aspects of the storm, impacts on coastal zones, damage to buildings and structures, human response to and social aspects of this disaster, and the effects of building codes and insurance on disaster impact and recovery.

**The Deadliest, Costliest, and Most Intense United States Hurricanes of this Century (and Other Frequently Requested Hurricane Facts).** Paul J. Hebert, Jerry D. Jarrell, and Max Mayfield. NOAA Technical Memorandum NWS TPC-1. 1996. 32 pp. \$21.50, North America; \$43.00, beyond North America. Order from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161; (703) 487-4650; fax:

(703) 321-8547; e-mail: orders@ntis.fedworld.gov. Specify order number PB96-174297INB.

This list of the 30 deadliest and costliest hurricanes striking the U.S. during this century was compiled from all data sources available to the Tropical Prediction Center of the National Weather Service. Both absolute damage amounts and amounts adjusted for inflation are provided. Additionally, all major hurricanes making landfall in the U.S. during this century are listed, and statistics on U.S. hurricanes of this and previous centuries, as well as information on tropical cyclones in general, are presented.

### Hurricanes in Florida

The International Hurricane Center at Florida International University (FIU) recently announced the availability of several publications. They are:

- **Ethnic and Racial Differentials in Homeowner's Insurance, Hurricane Andrew Insurance, Settlements, and Insurance Redlining in Dade County, Florida: Research Findings and Policy Recommendations.** Walter Gillis Peacock and Chris Girard. Preliminary Report #1. No date. 10 pp.
- **The Enclave Economy and Market Based Recovery: The Case of Hurricane Andrew.** Walter Gillis Peacock, Chris Girard, and Hugh Gladwin. Preliminary Report #2. No date. 23 pp.
- **Assessing the Likelihood of Evacuation Next Time: Some Preliminary Findings from the FIU Hurricane Andrew Survey.** Walter Gillis Peacock and Hugh Gladwin. Preliminary Report #3. No date. 10 pp.
- **Community as an Ecological Field: A Potential Contribution from Disaster Research and Theory.** Walter Gillis Peacock. Preliminary Report #4. 1995. 26 pp.
- **Ethnic and Racial Differences in Hurricane Andrew Damage and Insurance Coverage: A Summary of Findings from the FIU Hurricane Andrew Survey.** Walter Gillis Peacock, Chris Girard, and Hugh Gladwin. Preliminary Report #6. No date. 10 pp.
- **Hurricane Andrew Through Women's Eyes: Summary and Recommendations.** Elaine Enarson and Betty Hearn Morrow. Preliminary Report #8. No date. 8 pp.
- **Ethnic Relations and Ethnic Conflict in Tent City: Understanding Andrew's Aftermath.** Kevin A. Yelvington and Donna A. Kerner. Preliminary Report #9. 1993. 13 pp.
- **Lessons Learned from Hurricane Andrew: Conference Proceedings.** Philip H. Mann, Editor. 1993. 215 pp.

Prices vary and requests for copies must be made in writing. A limited number of copies are available. For details, contact Walter Gillis Peacock, International Hurricane Center, Florida International University, Miami, FL 33199; (305) 348-1607; WWW: <http://www.fiu.edu/~hurricane>.

**Shore Protection and Beach Erosion Control Study: Economic Effects of Induced Development in Corps-Protected Beachfront Communities.** IWR Report 95-PS-1. 1995. 106 pp. Free.

**Shoreline Protection and Beach Erosion Control Study: Final Report: An Analysis of the U.S. Army Corps of Engineers**



**Shore Protection Program. IWR Report 96-PS-1. 1996. 382 pp. Free.**

A limited number of copies of both reports are available from Arlene Nurthen, U.S. Army Corps of Engineers, Institute for Water Resources, Water Resources Support Center, 7701 Telegraph Road, Casey Building, Alexandria, VA 22315-3868; (703) 428-9042; fax: (703) 428-8435; e-mail: arlene.nurthen@inet.hq.usace.army.mil.

**Economic Effects of Induced Development in Corps-Protected Beachfront Communities** describes a study that examined the effects of federal shore protection projects on local growth and development. Researchers concluded that there is no evidence that such projects induce development along unprotected shorelines, residents of beachfront communities do not perceive the Corps of Engineers as their sole source of protection from erosion, awareness of the Corps decreases with wealth and increases with time of residence in a community, and the existence of a Corps protection project is not statistically significant in generating changes in the pattern and growth of development.

The **Final Report** presents the results of this two-phase study undertaken by the U.S. Army Corps of Engineers to analyze the effectiveness of its shore protection program. The study compared the costs of projects, analyzed project benefits, examined induced development, evaluated the level of protection provided, and quantified environmental effects. It concluded that the shore protection program is effectively managed, projects perform well within acceptable limits, the major benefit is reduction of storm damage, projects have no measurable effect on development, and beach restoration and periodic renourishment are the most environmentally desirable shore protection alternatives.

**1995 Atlantic Hurricanes. 1996. 2' x 3' poster. \$20.00. Order from the National Geophysical Data Center, Code E/GC2, Department 982, 325 Broadway, Boulder, CO 80303-3328; (303) 497-6761; fax: (303) 497-6513; e-mail: info@ngdc.noaa.gov; WWW: <http://www.ngdc.noaa.gov/dmsp/dmsp.html>.**

The 1995 Atlantic hurricane season was one of the most active and destructive seasons on record, with 11 tropical cyclones reaching hurricane strength. This poster presents Defense Meteorological Satellite Program (DMSP) images of these storms. Each image is accompanied by text detailing vital statistics of each hurricane, including maximum wind speed, minimum pressure, and estimated property damage.

## Earthquakes and Other Geologic Hazards

**Post-Earthquake Investigation Field Guide. 1996. 214 pp. \$15.00, plus \$5.00 handling. California residents, add 8¼% sales tax. Available from the Earthquake Engineering Research Institute (EERI), 499 14th Street, Suite 320, Oakland, CA 94612-1934; (510) 451-0905; fax: (510) 451-5411; e-mail: eeri@eeri.org; WWW: <http://www.eeri.org>.**

Since its inception in 1949, the Earthquake Engineering Research Institute (EERI) has conducted postearthquake investigations to improve earthquake engineering and hazard reduction. This **Field Guide** outlines EERI procedures for such research, describing methods for deciding which earthquakes will be investigated, the responsibilities of project participants, how investigation teams will be formed and dispatched, and how the information will be collected and disseminated.

**Shaken Awake! Estimates of Uninhabitable Dwelling Units and Peak Shelter Populations in Future Earthquakes Affecting the San Francisco Bay Region. Publication No. P96002EQK. 1996. 148 pp. \$15.00, plus \$5.00 shipping. California residents, add 8¼% sales tax. Order from the Association of Bay Area Governments, P.O. Box 2050, Oakland, CA 94604-2050; (510) 464-7900; fax: (510) 464-7979; WWW: <http://www.abag.ca.gov>.**

To estimate how many people will be made homeless by a major earthquake in the San Francisco Bay Area, the Association of Bay Area Governments (ABAG) examined the impacts of 11 hypothetical earthquakes on housing and shelter demand. They discovered that six of those quakes would probably create greater damage than the 1989 Loma Prieta earthquake, which rendered more than 16,000 dwelling units uninhabitable. The scenarios were based on estimates of dwelling unit inventory by construction type, location of quake intensity, potential habitability following shaking, and census data. Once complete, the estimated impacts were mapped. Scenarios are provided for earthquakes on the Peninsula San Andreas, San Gregorio, Northern Hayward, Southern Hayward, Healdsburg-Rodgers Creek, Maacam, West Napa, Concord-Green Valley, Northern Calaveras, and Greenville faults.

**WSSPC '95: Annual Report and Sixteenth Meeting of the Western States Seismic Policy Council. 1996. 240 pp. \$15.00. Available from Andrea James, WSSPC, 121 Second Street, 4th Floor, San Francisco, CA 94105; (415) 974-6435; fax: (415) 974-1747; e-mail: [wsspc@wsspc.org](mailto:wsspc@wsspc.org).**

This document contains the proceedings of the 1995 annual meeting of WSSPC. It includes papers on tsunami hazard mitigation; paleoseismological studies in the Salt Lake City, Utah, and Flagstaff, Arizona, regions; hazard legislation; federal disaster funding; disaster insurance; hazardous materials and earthquakes; hazard mapping; and the use of consortia to reduce seismic risks. In addition, it contains the complete text of the latest WSSPC monograph, **Synopsis of Seismic Threats in the Western United States: Impacts to the National Transportation Infrastructure**.

**Understanding, Living With, and Controlling Shoreline Erosion: A Guidebook for Shoreline Property Owners. 1996. 95 pp. Free, plus \$3.00 postage and handling. A limited number of copies are available from the Tip of the Mitt Watershed Council, P.O. Box 300, Conway, MI 49722-0300; (616) 347-1181; fax: (616) 347-5928.**

Human activities along shorelines and throughout watersheds can greatly accelerate natural erosion, with profound environmental and economic consequences, often lowering the stability and productivity of aquatic habitats and degrading privately held land. This guide provides an ecosystem approach to understanding and controlling inland lake and stream shoreline erosion. It describes the physical processes involved; the impacts of erosion, including sediment pollution, loss of vegetation and habitat, and diminished fisheries; the causes of erosion; preventive and remedial measures for controlling erosion; and planning and erosion-control projects. A reference guide is included that provides information on obtaining federal and state publications, books, journals, and other periodicals. Appendices provide examples of shoreline erosion severity indexes, critical area planting guidelines, a catalog of useful erosion-control plants, lists of commercial sources of plants, sources of other erosion-control products, and sources of technical assistance.



## THE HAZARDS CENTER

The NATURAL HAZARDS RESEARCH AND APPLICATIONS INFORMATION CENTER was founded to strengthen communication among researchers and the individuals and organizations concerned with mitigating natural disasters. The center is funded by the National Science Foundation, Federal Emergency Management Agency, National Oceanic and Atmospheric Administration, U.S. Geological Survey, U.S. Army Corps of Engineers, U.S. Forest Service, Environmental Protection Agency, U.S. Department of Transportation, and the Insurance Institute for Property Loss Reduction. Please send information of potential interest to the center or the readers of this newsletter to the address below. The deadline for the next *Observer* is November 15, 1996.

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